

# **OIL ANALYSIS REPORT**

Sample Rating Trend

## NORMAL



Resample at the next service interval to monitor.

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the

The condition of the oil is acceptable for the time in

All component wear rates are normal.

DIAGNOSIS Recommendation

Contamination

Fluid Condition

Wear

oil.

service.

Machine Id **7818** Component **Diesel Engine** Fluid

PETRO CANADA DURON SHP 15W40 (18 LTR)

# **|||\_|||\_\_\_\_\_\_**

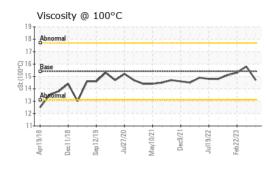


	MATION	method	limit/base	current	history 1	history 2
Sample Number		Client Info		GFL0074291	GFL0074301	GFL0074277
Sample Date		Client Info		05 Jul 2023	09 Jun 2023	22 Feb 2023
Machine Age	hrs	Client Info		26683	26470	25202
Oil Age	hrs	Client Info		1093	880	635
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	ON	method	limit/base	current	history 1	history 2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method	20.0	NEG	NEG	NEG
WEAR METALS	2	method	limit/base			history 2
				current	history 1	17
Iron	ppm	ASTM D5185(m)	>75	10	29	
Chromium	ppm	ASTM D5185(m)	>5	<1	<1	<1
Nickel	ppm	ASTM D5185(m)	>4	<1	<1	<1
Titanium	ppm	ASTM D5185(m)	>2	0	<1	<1
Silver	ppm	ASTM D5185(m)	>2	0	0	0
Aluminum	ppm	ASTM D5185(m)	>15	5	2	2
Lead	ppm	ASTM D5185(m)	>25	0	<1	0
Copper	ppm	. ,	>100	<1	<1	<1
Tin	ppm	ASTM D5185(m)	>4	0	0	<1
Antimony	ppm	ASTM D5185(m)		0	0	0
Vanadium	ppm	ASTM D5185(m)		0	0	0
Beryllium	ppm	ASTM D5185(m)		0	0	0
Cadmium	ppm	ASTM D5185(m)		0	0	0
ADDITIVES		method	limit/base	current	history 1	history 2
Boron	ppm	ASTM D5185(m)	0	5	5	4
Barium	ppm	ASTM D5185(m)	0	0	0	0
Molybdenum	ppm	ASTM D5185(m)	60	60	66	64
			0			
Manganese	ppm	ASTM D5185(m)	0	<1	<1	<1
Manganese Magnesium	ppm ppm	ASTM D5185(m) ASTM D5185(m)	0 1010	<1 978	<1 1049	<1 1039
•		ASTM D5185(m)				
Magnesium	ppm	ASTM D5185(m)	1010	978	1049	1039
Magnesium Calcium Phosphorus Zinc	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	1010 1070	978 1072	1049 1182	1039 1173
Magnesium Calcium Phosphorus	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	1010 1070 1150	978 1072 1073	1049 1182 1145	1039 1173 1114
Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	1010 1070 1150 1270 2060	978 1072 1073 1207	1049 1182 1145 1277	1039 1173 1114 1275
Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	1010 1070 1150 1270 2060	978 1072 1073 1207 2573	1049 1182 1145 1277 2448	1039 1173 1114 1275 2555
Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	1010 1070 1150 1270 2060	978 1072 1073 1207 2573 <1	1049 1182 1145 1277 2448 <1	1039 1173 1114 1275 2555 <1
Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	1010 1070 1150 1270 2060 limit/base	978 1072 1073 1207 2573 <1 current	1049 1182 1145 1277 2448 <1 history 1	1039 1173 1114 1275 2555 <1 history 2
Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm TS	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) <b>Method</b> ASTM D5185(m)	1010 1070 1150 1270 2060 limit/base	978 1072 1073 1207 2573 <1 current 4	1049 1182 1145 1277 2448 <1 history 1 5	1039 1173 1114 1275 2555 <1 history 2 3
Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm TS ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) <b>Method</b> ASTM D5185(m) ASTM D5185(m)	1010 1070 1150 1270 2060 limit/base >25	978 1072 1073 1207 2573 <1 current 4 5	1049 1182 1145 1277 2448 <1 history 1 5 8	1039 1173 1114 1275 2555 <1 history 2 3 7
Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm TS ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	1010 1070 1150 1270 2060 imit/base >25 >20	978 1072 1073 1207 2573 <1 <u>current</u> 4 5 11	1049 1182 1145 1277 2448 <1 history 1 5 8 <1	1039 1173 1114 1275 2555 <1 history 2 3 7 <1
Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	1010 1070 1150 22060 <b>limit/base</b> >25 >20 <b>limit/base</b>	978 1072 1073 1207 2573 <1 current 4 5 11 current	1049 1182 1145 1277 2448 <1 history 1 5 8 <1 history 1	1039 1173 1114 1275 2555 <1 history 2 3 7 <1 history 2
Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	1010 1070 1150 1270 2060 Imit/base >25 >20 Imit/base >6	978 1072 1073 1207 2573 <1 current 4 5 11 current 0.4	1049 1182 1145 1277 2448 <1 history 1 5 8 <1 history 1 1.4	1039 1173 1114 1275 2555 <1 history 2 3 7 <1 history 2 0.7
Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D7844* ASTM D7844* ASTM D7624*	1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20 <b>limit/base</b> >6 >20	978 1072 1073 1207 2573 <1 current 4 5 11 current 0.4 7.0	1049 1182 1145 1277 2448 <1 history 1 5 8 <1 history 1 1.4 1.4 12.1	1039 1173 1114 1275 2555 <1 history 2 3 7 <1 history 2 0.7 8.4
Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm TS ppm ppm ppm ppm % Abs/cm Abs/cm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D7844* ASTM D7844* ASTM D7624*	1010 1070 1150 22060 <b>imit/base</b> >25 >20 <b>imit/base</b> >6 >20 >20 >30	978 1072 1073 2573 <1 current 4 5 11 current 0.4 7.0 19.5	1049 1182 1145 1277 2448 <1 history 1 5 8 <1 history 1 1.4 1.4 12.1 25.8	1039 1173 1114 1275 2555 <1 history 2 3 7 <1 history 2 0.7 8.4 22.2

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# **OIL ANALYSIS REPORT**



°C	VISUAL		method	limit/base	current	history 1	history 2	
	White Metal	scalar	Visual*	NONE	NONE			
	Yellow Metal	scalar	Visual*	NONE	NONE			
	Precipitate	scalar	Visual*	NONE	NONE			
*	Silt	scalar	Visual*	NONE	NONE			
	Debris	scalar	Visual*	NONE	NONE			
	Sand/Dirt	scalar	Visual*	NONE	NONE			
Jul27/20 May10/21 Jul19/22 Feb22/23	Appearance	scalar	Visual*	NORML	NORML			
Julž Mavi Jul1 Febž	Odor	scalar	Visual*	NORML	NORML	NORML	NORML	
	Emulsified Water	scalar	Visual*	>0.2	NEG	NEG	NEG	
	Free Water	scalar	Visual*		NEG	NEG	NEG	
	FLUID PROPE	RTIES	method	limit/base	current	history 1	history 2	
	Visc @ 100°C	cSt	ASTM D7279(m)	15.4	14.7	15.8	15.3	
	GRAPHS							
	Iron (ppm)			Lead (ppm)				
	150 Severe				Severe			
	100				10 <b></b>			
	E Abnormal							
	50-				20			
			$\sim$		0			
	Apr19/18 Dec11/18 Sep12/19	May10/21	Dec9/21 Jul19/22	Feb22/23	Apr19/18 Dec11/18 Sep12/19	Jul27/20 May10/21	Dec9/21 Jul19/22 Feb22/23	
	Apri Sepj	May	Juli	Feb2	Apri Deci	Julí May	Juli Febž	
	Aluminum (ppm)				Chromium (pp	m)		
	<sup>30</sup> 25 Severe				Severe			
	20				8			
	E 15 - Abnormal			bhu	6 - Abnormal			
	5				4			
					0		$\rightarrow$	
	Apr19/18 Dec11/18 Sep12/19	May10/21	Dec9/21 Jul19/22	Feb22/23	Apr19/18 - Dec11/18 - Sep12/19 -	Jul27/20 May10/21	Dec9/21 Jul19/22 Feb22/23	
		Mai	a nr	Feb		Mar	Ju Ju	
	Copper (ppm)				Silicon (ppm)			
	200 Severe				Severe			
	= 150-				10			
	E 100 - Abnormal			udd	<sup>30</sup> Abnormal			
	50-				10 -			
			2	m			33 2	
	Apr19/18 Dec11/18 Sep12/19	May10/21	Dec9/21 Jul19/22	Feb 22/23	Apr19/18 Dec11/18 Sep12/19	Jul27/20 May10/21	Dec9/21 Jul19/22 Feb22/23	
	Viscosity @ 100°C		~ ~	Ξ.	∝ ت ∞ Soot %	ר ⊻		
	20 Abnormal			8	.0 Severe			
	18 Abnormal				.0 - Abnormal		-	
	0-0016 Base 75 14 Abnormal			Noos %	.00000			
	4 Abbernial				.0			
	10				.0		$\sim\sim$	
	Apr19/18 Dec11/18 Sep12/19	May10/21	Dec9/21 Jul19/22	Feb 22/23	Apr19/18 Dec11/18 Sep12/19	Jui27/20 May10/21	Dec9/21 Jul19/22 Feb22/23	
	Api Dec Sep	May	Jul	造	Api	Ju May	Ju Ju Feb	
CALA Laboratory Sample No Laboratory Laboratory Test Packa	: GFL0074291 r : 02568165 per : 5605211 ge : MOB 1 (Additional					<b>GFL Environmental - 216</b> 15 Bermondsey Road Toronto, ON CA M4B 0A6 Contact: Tom Hatzioannidis		
To discuss this sample repo Test denoted (*) outside sco Validity of results and interp	pe of accreditation, (m) m	nethod m	odified, (e) te	ested at exte			idis@gflenv.com Γ: (416)678-9340 F:	

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Submitted By: Tom Hatzioannidis Page 2 of 2